



## DISTRIBUTION OF CARIBBEAN BUTTERFLIES

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In 1970 I published a distribution table of all Caribbean butterflies (Scott 1970). Based on literature research, it contained some errors, and the records from the Lesser Antilles were sufficiently incomplete that they were lumped into only four island groups. Since then, many papers have added new records. Pinchon & Enrico (1969, not seen by Scott 1970) and others added numerous records for the Lesser Antilles. Riley (1975) published a field guide to Caribbean butterflies which admirably illustrated each species in color, summarized their distributions, and cleared up some problems concerning synonymies and other taxonomic matters. Expeditions to the Bahamas by H. Clench and associates added numerous records. A. Schwartz, F. Gali, and others (including Marion 1982) have finally given Hispaniola the exploration it deserves. Ramos (1982) updated the Puerto Rico list, and Askew (1980, 1985) added Cayman Is. data. Some new species and subspecies of Caribbean butterflies have been named, and some taxonomic revisions have clarified taxonomic relationships between species and subspecies.

Unfortunately Riley (1975) did not list numerous island records, lumped the Lesser Antilles records into only two groups (Leeward and Windward Is.) in the distribution table, and the book contains some errors, omissions, and discrepancies between distribution table and text. And both Scott (1970) and Riley (1975) lumped all Virgin Islands into only one group, and lumped all Bahamas Islands into only one group (recent findings show that the southeastern Bahamas, namely Acklins to Turks Is., have some species/subspecies relationships with Hispaniola, Table 2).

Thus, it is time for a new table of distribution (Table 1), for the first time listing the species present on EACH island of the Caribbean, without lumping islands into "island groups". Each subspecies is also listed, keyed to the ssp. given by Riley (1975): the first ssp. characterized by Riley is given the letter a, the second ssp. b, etc. If two or more ssp. occur on an island, a number such as 3 lists how many there are. (Many of these ssp. are weak, but no attempt has been made to synonymize them.) If the species is only a rare stray on the island, an s is used. The table arranges the species in a better phylogenetic sequence than previously (following available generic/tribal revisions, and following Scott 1984 at the subfamily/family level).

There are still some difficulties with the table.

Unfortunately, many old specimens in museums are mislabeled; some judgements concerning whether these are valid records or errors may be wrong. Recent collections are particularly important to confirm or reject these old specimens. Misidentifications occur in published papers, requiring judgement to delete or keep them. And new taxa are frequently given exaggerated status by their describers (a subspecies named as a species, a time-honored genus needlessly split), so judgement is needed to assign these the proper status. The Notes below explain the major errors and discrepancies in other papers, new subspecies /species named since Riley (1975), reinterpretations, etc.

Hopefully, the table will be kept up to date as new information arrives, so that each copy distributed will have the latest findings. (Custom-made tables could even be made if someone prefers that certain taxa be lumped or split, etc. Most journals print a fixed number of copies at one time and mail them then, and shortly after receipt the readers find various errors or improvements and send them to the author, who is then frustrated because nothing can be done to remedy the flawed product; in too many cases, the author and journal then ignore the newly-discovered flaws. The ease of computer

updating and the flexibility of the journal "Papilio" permit a continuously updated product, ideal for ongoing projects such as distribution tables, distribution maps, and other databases. The distribution data reside in BASIC language "data" statements, so mathematical computations can be easily done.)

Bermuda records are based on Hughes (1981), Ogilvie (1928), and Riley (1975). The Literature Cited below includes all the important references for the Antilles and Bahamas.

The fauna of small islands can undergo considerable turnover of species, as some species disappear and others arrive (R. Askew notes this on the Cayman Is., pers. comm.). Migratory species on larger islands may undergo similar fluctuations. Thus, the current set of species may be only a subset of the historical fauna listed on the table.

Biogeographic statistics (Table 2) show that the conclusions of Scott (1972) are essentially unchanged. New data show that the northern two-thirds of the Bahamas are closely related to Cuba, whereas the southern third (Acklins to Turks) are more closely related to Hispaniola. The Caribbean islands show nearly an equal relationship to South and Central America, although the northern Bahamas show a very slightly greater relationship to Central Amer. while the Lesser Antilles (especially southward) show a closer relationship to South America.

#### NOTES

##### PAPILIONIDAE, Papilioninae

Papilio andraemon. Little Inagua I. is a sight record. Also "Cat Cay" in Bahamas.

P. machaonides. Riley (1975) lists and illustrates it from Puerto Rico, but Ramos (1977, 1982) does not record it from P.R., so the Puerto Rico specimen is tentatively considered mislabeled.

P. aristodemus driophilus Clench 1979 & P. a. bjorndalae Clench 1979 are in Bahamas.

P. astyalus from St. Lucia is thought to be misidentified P. androgeus by Riley 1975.

P. androgeus is in Puerto Rico (Ramos 1977).

Battus polydamas thyamus is on Puerto Rico (Ramos 1977). The name eurydamas (type locality Martinique) is a synonym of B. p. xenodamas.

##### PIERIDAE, Dismorphiinae

Dismorphia spio & cubana may be distinct species. (Riley 1975 p. 137 notes that spio varies from orange to wholly yellow.)

##### Coliadinae

Colias eurytheme is a stray in Cuba (Torre y Callejas 1971).

Kricogonia lyside & the form previously called "castalia" (which is the Jamaican ssp. of Appias drusilla) have been reared from each other so are the same species (T. Turner, in Howe 1975). K. lyside is present on Cuba and common on Puerto Rico (Ramos 1977). Also in Berry Is. and Conception I., Bahamas.

Phoebis philea is listed by Comstock (1944) and Ramos (1982) from Puerto Rico, where it is evidently a stray.

P. "drya" (Isle of Pines, Holland 1916) refers to P. sennae (listed as a synonym of sennae by dos Passos 1964), or possibly to P. orbis because Holland also lists P. sennae.

P. agarithe from Trinidad (Longstaff 1912), but I have not found the source of the Tobago record of Scott (1970), which is ignored.

P. trite belongs to Phoebis (Rhabdodryas) (not to Aphrissa as in Riley's table).

Phoebis (Aphrissa) statira from Bahamas (Nassau, Sharpe 1900) is treated as A. neleis by Riley. Ssp. cubana breeds in Puerto Rico (Ramos 1977).

Eurema दौरa. E. lydia is a ssp. of dौरa.

E. elathea. Also in Marina Cay near Tortola.

E. lucina. E. priddy (Hispaniola) and priddy forbesi (forbesi type locality Isle of Pines, named by Klots 1928, missed by Riley 1975) are treated as ssp. of E. lucina. The genitalia of

priddyi & lucina are the same, and Klots (1928, 1929) treated "lucina f. fornsi" as "priddyi forbesi"; Klots' figures show a stepped fw margin in priddyi also. E. fornsi was named by Poey, not by Klots. "fornsi p. 124" should be added to index. The name conjungens is a synonym of E. lucina.

E. boisduvaliana (occurs from Costa Rica northward) may be a ssp. of E. gratiosa (occurs from Panama southward); adamsi is related to both. E. boisduvaliana is common near Havana & Soledad in Cuba (Torre y Callejas 1971).

E. messalina. Also Conception I. Bahamas.

E. laeae may be a ssp. of E. nise.

E. lisa. Also on Marina Cay near Tortola. Tentatively accepted from Trinidad, where Riley's (1975) table lists it (Riley's text and Barcant 1970 do not list it from Trinidad).

E. nise. E. neda is a synonym of nise. E. nise is common in Cuba (Torre y Callejas 1971) and present on Hispaniola (Luis Marion Heredia pers. comm.).

E. chamberlaini from Andros is merely based on a guess as to the type locality, a guess which H. Clench (1977a) believed erroneous. The male unf of adults I examined does not have brilliant white modified scales as stated in Riley (1975) p. 121.

E. venusta is treated as a distinct species from nise. E. venusta from St Thomas (reported by Klots 1928-29) is an error according to Monroe 1950. Form limbia has a white uph.

E. leuce. E. thymetus is a female form of E. leuce (in Barcant 1970 for instance). Monroe (1950) lists E. dina westwoodi from Tobago and S. Amer., which apparently refer to E. leuce (Barcant 1970 lists only leuce from Tobago).

E. dina is not in Puerto Rico as Riley's (1975) text states. Form citrina is a female form of E. dina.

"Terias deba" from Dominica (Dyar 1914) could be the continental Eurema deva, but deva is not even on Trinidad, so Dyar meant another Eurema.

#### Pierinae

Appias peregrina is a form of drusilla. St. Lucia has ssp. comstocki (Schwartz & Jimenez 1982).

Pieris rapae was found once in a Jamaica grocery store, an airplane import (larvae eat cabbage) so deleted from table.

P. protodice was a stray to Cuba in 1933 & 1934, which apparently died out.

Ascia monuste. The white female form migrates also (E. Nielsen 1961, Biol. Meddelelser 23:2-81). Ramos (1982) reared four "subspecies" from eggs laid by one female. Ssp. evonima is treated as a synonym of eubotea Latreille 1819 by Clench etc., though the latter's type locality is obscure.

A. menciae was assigned as a ssp. of A. josephina by Torre y Callejas (1963), based on wing pattern and genitalia, and Comstock (1943) also suggested this assignment.

#### NYMPHALIDAE, Danainae

Anetia briarea was actually named by Godart in 1819.

A. cubana from Jamaica is based on sight records cited by Brown & Heineman (1972), which may be a "closely related species".

Lycorea cleobaea larva described by H. Dyar (Proc. Ent. Soc. Wash. 13:227, 1911). The name ceres is a homonym, replaced by the name pieteri (Lamas 1978), and cleobaea is the proper species name (Miller & Brown 1981).

Danaus plexippus is on Vieques (Forbes 1939). Ssp. leucogyne may be a synonym of megalippe.

My previous table (Scott 1970) contained listings of D. eresimus from Martinique & Bahamas, and D. gilippus from Martinique, but these records should be ignored until their sources are found.

D. cleophile from Puerto Rico is an error for D. plexippus (the specimen was later described as D. plexippus portoricensis, Ramos 1977). D. cleophile was apparently validly collected in Jamaica by Thaxter (Forbes 1939 cites the specimen).

#### Ithomiinae

Greta diaphana charadra, d. calimete, and d. galii all named from Dominican Rep. by Schwartz (1982).

#### Satyrinae

Lethe portlandia from Bermuda (Ogilvie 1928) is an error.

Euptychia libye from Jamaica is an error.

Calisto chrysaoros. C. galii (named by Schwartz 1983b) from

Hispaniola is treated as a ssp. of chrysaoros.

C. grannus includes (as two ssp.) micrommata and sommeri (both named by Schwartz & Gali 1984).

C. clydoniata clydoniata and C. clydoniata clenchi are treated as ssp. (both named by Schwartz & Gali 1984) of clydoniata (page priority).

C. debarriera is a high altitude form of confusa according to Riley (1975), but I treat it as a distinct species (as does Munroe 1950b), with C. d. neiba (named by Schwartz & Gali 1984) a ssp. of it (both debarriera & neiba occur at higher altitude and have the unh lines weaker than those of confusa; neiba has more unh ocelli than the others; neiba is sympatric with confusa).

"debarriera p. 50" should be added to Riley's index.

C. sibylla includes ssp. biocellatus (type locality Pico Turquino, not Pico Cuba), as hinted by Riley (1975). C. smintheus is a ssp. of sibylla according to Riley (1975), although Clench (1977a) disagrees.

C. bruneri & parsoni are treated as Cuban C. sibylla smintheus X C. herophile hybrids.

#### Charaxinae

Prepona amphitoe is treated as a ssp. of antimache, although perhaps they are distinct. P. antimache crassina from Bermuda is an error.

Anaea clytemnestra is the correct name for "Hypna iphigenia".

A. marthesia is the correct name for "Siderone galanthis".

A. troglodyta astina (St. Thomas & St. Croix) was missed by Riley.

A. floridalis, portia, borinquenalis, astina, minor, and cubana are all ssp. of troglodyta, and were also treated as such in Riley's (1975) distribution table.

A. johnsoni is a ssp. of the mainland A. glycerium.

A. echemus, intermedia, and dominicana are ssp. of A. verticordia.

The name hypermnestra is a synonym of verticordia. Also West Plana Cay and Providenciales, Bahamas.

#### Apaturinae

Asterocampa idyia. Includes ssp. argus of mainland.

#### Nymphalinae

Limenitis (Adelpha) cytherea insularis from St. Lucia is thought to be mislabeled.

Pyrrhogyra neaerea ("tipha") from St. Lucia is thought to be mislabeled.

Dynamine mylitta is apparently native to Cuba (Torre y Callejas 1971).

"Aprotopos psidii" has been recorded from Hispaniola, but I have not been able to determine to which species this record belongs.

Diaethria "dominicana" is a nomen nudum of Scott 1970, never having been validly published, and refers to Diaethria codomannus ("astarte") antillena Kaye from St. Lucia, which is also an error (thought to be mislabeled).

Eunica tatila is given for Andros I. based on a drawing mentioned by Clench (1977a).

E. macris. Scott (1970) lists Trinidad, but neither Barcant (1970) nor Riley (1975) list Trinidad, so a valid record will have to be found before accepting it.

Mestra dorcas resembles mainland M. amymone except for its orange upf tip, so may be a ssp.; it was considered a synonym of amymone by dos Passos 1964.

"Cystineura hypermnestra" (Clark 1904) refers to Mestra cana.

Hamadryas feronia. The Antillean ssp. is farinulenta, with insularis a synonym (Jenkins 1983).

- Hamadryas "ferox" diasia is actually H. glauconome ("amphichloe", which seems to be a ssp. of glauconome) diasia, which is native to Puerto Rico, and is related to S. Amer. ssp. (Jenkins 1983). Riley's (1975) larval description refers to mainland H. februa.
- H. amphinome. Three sites and many specimens show this to be native to Cuba (Jenkins 1983).
- Marpesia marius is a synonym of M. chiron.
- M. petreus. Also in "Bahamas", based on one stray, no specific island stated.
- Hypolimnias misippus. Diadema bolina from Dominica (Godman & Salvin 1884) is a synonym. The species evidently was introduced from Africa to America via the slave trade.
- Siproeta stelenes. Ssp. insularis is a synonym of biplagiata (Miller & Brown 1981).
- Anartia amathea. A. fatima of Panama-Tex. may be a ssp. of the S. Amer. amathea, as they hybridize in Panama (R. Silbergeld, deceased, researched this but I have not seen the results).
- A. jatrophae. Eats Lippia in Fla.
- A. lytrea chrysopoelea host is Lippia in Cuba (V. Dethier, Psyche 48:70).
- Precis evarete is on Vieques (Munroe 1951). Ssp. michaelsi is a synonym of P. evarete zonalis. Many old records of P. evarete still need to be checked (including many Bahamas specimens in the Carnegie Museum) to see whether they refer to P. evarete or to P. genoveva (Scott 1986 illustrates both and details their distinguishing features and natural history). P. "evarete" has been recorded from the following islands, and the records may refer to true evarete or genoveva or both: Grand Bahama, Great Abaco, Andros, New Providence, Eleuthera, Cat, San Salvador, Rum Cay, Long, Isle of Pines, Grand Cayman, Cayman Brac, Mona I., Vieques, St. Thomas, St. John, Tortola, St. Martin, St. Barthelemy, Antigua, St. Kitts, Montserrat, Guadeloupe, Marie Galante, Les Saintes, Dominique, Martinique, St. Lucia, St. Vincent, Barbados, Grenadines, Tobago, and Trinidad. P. genoveva possibly occurs in South and Central Mexico also (it does occur south to Yucatan). Turner & Parnell (1985) correctly separate the two species, give hostplants, and their identification traits are largely the same as those of Scott (1986); however, they use the wrong names for them, because their Figs. 2-3 are actually P. genoveva (see their color photo of genoveva type on p. 147, noting the pinched white band, bright colors, orange submarginal uph band, pale unh, etc.), and their Figs. 4-5 are actually P. evarete zonalis (see their color photo of the evarete type on p. 146, and note its smoky ups, dark unh--ssp. zonalis differs somewhat from S. Amer. evarete which may explain the pinched white band on p. 146).
- P. genoveva. Occurs on Conception I., Bahamas (Clench & Bjorndal 1980, who list other islands and separate evarete from genoveva).
- Vanessa cardui & V. virginensis are resident in the Greater Antilles (Torre y Callejas 1954 & 1971, Schwartz 1983), whereas V. atalanta is a stray.
- Atlantea perezi, pantoni, tulita, and cryptadia (cryptadia named by Sommer & Schwartz 1980 from Hispaniola), are treated as ssp. of perezi because they seem to represent one phyletic line, although they look somewhat different (Riley's 1975 fig. of pantoni is a female; the male is red-brown more like perezi & tulita). If perezi and pantoni are treated as species, then cryptadia should still be considered a ssp. of tulita.
- Phyciodes tharos is on S. Bimini I. (Rindge 1952).
- P. frisia. Also Berry Is., Bahamas.
- Euptoieta claudia is on Puerto Rico (1976 Lepid. News #2, and Ramos 1976).
- E. hegesia. Also West Plana Cay, Bahamas.
- Dione vanillae. Also in Berry Is., West Plana Cay, and Conception I., Bahamas.
- D. juno from Hispaniola & Cuba (Hall 1925) apparently refers to D. vanillae.

Dryas iulia largo Clench 1975 was described from Florida. Also in Berry I., Bahamas. Ssp. delila is a lapsus calami for delia (dos Passos 1964). Clench (1975a) notes that Jamaican iulia came from Central America, whereas all other ssp. came from South America, spreading up the Lesser Antilles to the Greater Antilles then to Florida.

Heliconius alipherus "possibly from Grenada" is ignored because it is a guess by Emsley (1965).

H. isabella melphis. Larva of ssp. eva (= zorcaon) described by G. Ross from Mexico (J. Res. Lepid. 3:217-219).

H. charitonius. Only ssp. punctatus occurs on Montserrat (Schwartz & Jimenez 1982).

"Philaethria dido" records are sight records of Siproeta stelenes.

#### LIBYTHEIDAE

All Libytheana are treated as ssp. of carinenta because the continental L. carinenta mexicana and L. bachmanii appear to be conspecific based on genitalic study and larval structure (see Scott 1986). Ssp. fulvescens is closely related to continental ssp. carinenta, and ssp. terena and its pallid relative ssp. motya are both closely related to continental ssp. bachmanii. Ssp. terena is in Jamaica (Vyhmeister 1980b) and Puerto Rico (Ramos 1982).

#### LYCAENIDAE, Riodininae

Calephelis near virginiensis---one male was recorded from Cuba (a stray?) (Torre y Callejas 1971).

#### Lycaeninae

Chlorostrymon simaethis is possible on Andros I. (sight record, Clench 1977a).

Allosmaitia fidenia is a ssp. of A. coelebs.

Strymon acis hostplants are Croton linearis, C. discolor in Fla. (F. & O. Chermock 1947, Can. Ent. 79:192; and 3 other persons). Also West Plana Cay, Bahamas, and Marina Cay near Tortola.

S. martialis. Also Conception I., West Plana Cay, Berry I., and Long Cay, Bahamas.

S. monopeteinus. Named from Hispaniola by Schwartz and Miller (1985), resembles S. bebrycia of Mexico but the ups is somewhat bluer.

S. rufofusca hostplant is Malvastrum coromandelianum (R. Kendall, Bull. Allyn Mus. #24).

S. bubastus. Thecla "eurytulus" from St. Vincent & Dominica apparently refers to Strymon bubastus.

S. columella. Also Conception I., Long Cay, and West Plana Cay, Bahamas. S. antiqua is a synonym of S. columella.

S. limenia. Also Marina Cay near Tortola.

S. bazochii may occur in Trinidad, but is not listed by Barcant (1970).

Thecla cardus in Comstock 1944 refers to Strymon christophei?

Thecla salona & "otoheba new species", recorded from Dominica by Godman & Salvin (1884) and Dyar (1914), are ignored, their identities uncertain.

Thecla "deva" from Dominica (Godman & Salvin 1884) may refer to "Terias deba"? and at any rate is treated as an error.

Calycopis "beon" from Hispaniola (Hall 1925) is treated as an error.

Euristrymon "favonius" (Isle of Pines, Holland 1916) is treated as a misidentification (of what?).

Electrostrymon angelia. Also Fla. (J. Lepid. Soc. 28:354) and Conception I., Bahamas. Both the Turks and Caicos I. islands are listed on the table, but the record was for either one of them.

"Tmolus salona" from Nassau (Sharpe 1900 p. 200) is ignored, its identity uncertain.

Tmolus azia (missing in Riley 1975) is now known from Grenada (Enrico & Pinchon 1969), Jamaica (Vyhmeister 1980a), Florida, Trinidad, and Mexico-South America.

Leptotes cassius. Also Stranger's Cay, Conception I., Long Cay, & Berry Is., Bahamas, and Marina Cay near Tortola.

L. marina. One stray Puerto Rico (Comstock 1944).

Brephidium pseudofea is treated as a ssp. of exilis because they seem to intergrade along the U.S. Gulf Coast and their genitalia is identical (see Scott 1986). I found exilis in Colombia (Santa Marta). The Fla. B. exilis pseudofea hostplant is Salicornia bigelovi, and adults are associated with Batis maritima also. B. e. pseudofea is native to Bimini. The Andros I. exilis record is based on Green Cay.

Hemiargus isola. One stray Puerto Rico (Comstock 1944).

H. ceraunus and hanno are treated as separate sympatric species by Schwartz 1983a, who states that they fly together at 4 sites in Haiti, so they are separated on the table until this can be investigated further. Clench (1964a) lists both in Costa Rica.

H. hanno hostplants are Phaseolus (J. Agric. Univ. Puerto Rico 36:352), and Mimosa pudica and Crotalaria verrucosa on Tortola (Bryant Mather, pers. comm.).

H. thomasi & ammon look similar, but are definitely distinct species. They are sympatric on many Bahamas Islands (N. and S. Andros, New Providence, Great Exuma and nearby Stocking I., Rum Cay, Cat I., Great Abaco, and Long), where ammon has the red hw lunule longer, and has more white ventral markings, whereas thomasi has an extra dark dot in the base of unh cell CuA2, the unf postmedian band is farther from the discal cell spot (and is often interrupted at vein M1), and the white unf submarginal arrowheads are slightly more pointed. (The anterior black uph marginal spot mentioned by Riley (1975) is capped with pink in females but not males. Females are blue on ups in March, mostly brown in summer.) I examined 184 of these adults deposited in the Carnegie Museum. The H. thomasi hostplant is Guilandina "bonducella" (now crista) & Pithecellobium guadeloupense in Florida (H. Dyar, Proc. Ent. Soc. Wash. 4:448). H. thomasi also occurs in Berry Is., Conception Is., and Rose Cay, Bahamas.

Hemiargus woodruffi is evidently a separate species from H. thomasi, because Ramos (1982) found H. thomasi noeli on Puerto Rico together with woodruffi which has long been known there; perhaps woodruffi is in NE Puerto Rico, noeli on SW Puerto Rico, in which case they may still be subspecies. Also on Marina Cay near Tortola (Bryant Mather, pers. comm.).

#### HESPERIIDAE, Hesperinae

Dalla diraspes ("pruna") from Hispaniola (Hall 1925) is treated as an error.

Callimormus alsimo from Cuba (the type locality of filata, and recorded by Poey (Torre y Callejas 1971, reported as C. radiola)) is an error, and from Hispaniola (Hall 1925, as C. filiata) is another error.

Monca telata ("West Indies", Ent. News 52:183) is treated as an error.

Cymaenes tripunctus. The male does not have a stigma (see Riley p. 196).

Morys valerius from Jamaica (Longstaff 1912) is treated as an error. Vettius fantasos. 1 male from Jamaica in British Mus. is considered mislabeled.

Rhinthon cubana. "sp. near cubana" from Hispaniola (Schwartz 1983a) is treated as ssp. osca, which has a brownish head and thorax (see Riley's 1975 fig. from Tobago).

Oarisma bruneri E. Bell 1959. This is tentatively treated as a subspecies of O. stillmani because it has a reddish upf stigma along the distal lower edge of the cell (orig. description Amer. Mus. Novitates #1962, type locality Moa, Cuba); it was missed by Riley 1975 (or ignored as a synonym of O. nanus?).

Hylephila phylaeus is a lapsus calami for phyleus (dos Passos 1964). Also West Plana Cay, Bahamas.

Polites vibex dictynna is treated as a ssp. of vibex. Longstaff's record (1912) from Jamaica is considered an error based on Nyctelius nyctelius (Brown & Heineman 1972). P. vibex vibex was missed by Riley (1975): Hall recorded it from Hispaniola (as vibex and dictynna), and it is in Puerto Rico (fig. by Comstock 1944, Riley 1975 p. 206, and Ramos 1982).

- P. baracoa from Bahamas is based on Polites "thaumas" from Nassau (Sharpe 1900). Ssp. myus is treated as a synonym of baracoa by Miller & Brown (1981) and Evans (1951-1955) but may be distinct. Wallengrenia misera is treated as a ssp. of W. egeremet, but the other Wallengrenia ssp. are treated as ssp. of W. otho, based on morphology and appearance. J. Miller has recorded both on Acklins I. Bahamas. W. egeremet also Berry Is., Bahamas. W. otho also Marina Cay near Tortola.
- Atalopedes mesogramma is on Puerto Rico (type locality of apa). A Costa Rica female in British Mus. is tentatively considered mislabeled.
- A. carteri is sympatric with mesogramma on New Providence I. so is tentatively treated as a distinct species.
- Choranthus vitellius (as "hubneri") hostplants are sugar cane and sudan grass (Comstock 1944). Also Marina Cay near Tortola.
- C. haitensis. Evidently a stray in P.R. (Comstock 1944, Ramos 1982).
- C. melissa Gali and C. m. schwartzi Gali from Hispaniola are tentatively treated as ssp. of one species melissa (page priority) because they appear very similar (the photos and drawings in the original description (Gali 1983) unfortunately do not allow adequate comparison). C. radians form ammonia of Cuba also has a brownish uns, which allows for the possibility that C. melissa is also a summer form of another species or that melissa is a ssp. of C. ammonia if the latter is a species.
- C. richmondi seems to be a ssp. of radians (very similar wing pattern, same genitalia).
- Euphyes singularis insolata. Hispaniola (many in British Museum, Evans 1951-1955).
- Asbolis capucinus hostplants are palms (Sabal palmetto, Cocos nucifera, Phoenix, Acoelorrhaphe wrightii).
- Amblyscirtes folia insulae-pinorum is a synonym of Euphyes cornelius (Riley 1975). "insulaepinorum p. 190" should be added to index.
- Calpodes ethlius is on St. Croix (Beatty 1944--shown in Riley's table but not in text), Barbados, Antigua, Montserrat, and Guadeloupe (Evans 1951-1955).
- Panoquina panoquinoides is on Cuba (Torre y Callejas 1954, 1971), the Bahamas (widespread, including Conception I.), Hispaniola (Comstock 1944), Puerto Rico (Ramos 1977), Virgin Is. (Beatty 1944), Leeward Is. (Enrico & Pinchon 1969), St. Martin (ssp. eugeon, C. B. Worth, 1982 Lepid. News #3 p. 41), most of these missed by Riley (1975).
- P. sylvicola is listed from Grenada and St. Vincent in my notes but until the sources can be found these records should be ignored.
- P. nero from Dominica (Dyar 1914) is treated as misidentified P. sylvicola. P. nero is on Cuba (Evans 1951-1955; V. Dethier, Mem. Soc. Cubana Hist. Nat. 16:167, recorded sugar cane and natural grasses as hostplants in Cuba; and Cuba is listed on Riley's (1975) table but not in his text).
- P. fusina jumbo Evans. 2 females from Jamaica in British Mus. are considered to be mislabeled from South America (probably Brazil, Riley 1975).
- Nyctelius nyctelius hostplants are corn (P.R., Comstock 1944) and rice (Cuba, J. Lepid. Soc. 17:157). Riley's (1975) table lists Bahamas and Caymans, but Caymans are considered an error based on Askew (1985).
- Saliana esperi is the proper name, not longirostris (N. Riley letter to J. Scott Feb. 21, 1972, stating that the British Museum has 1 male from Cuba that is definitely esperi).

#### Pyrginae

- Hyalothyrus neleus, Phocides polybius, Entheus prissus all have the type locality of "Indiis" which is mislabeled.
- Proteides mercurius grenadensis Enrico & Pinchon 1969 (Grenada) was missed by Riley.
- Epargyreus zestos inaguorum Clench & Bjorndal 1980 is in Bahamas. Also Berry Is., Bahamas. Occurs on Puerto Rico and Hispaniola (Comstock 1944, Ramos 1977, etc.). Type locality "Surinam". 5 adults "Honduras" in British Museum, perhaps an error?



- E. antaeus from Hispaniola (Hall 1925) apparently refers to E. spanna.
- Polygonus leo. Ssp. ishmael is a synonym of lividus Hubner 1825 (see Evans 1951-1955 Part III p. 476). The lividus type locality was fixed as Hispaniola by Comstock (1944). The P. leo records of Godman & Salvin (1884 & 1896) & Dyar (1914) refer to P. manueli, which was named in 1948.
- P. manueli does not now occur in Florida, and lepidopterists there now believe manueli never occurred there and "Florida" specimens in museums are mislabeled.
- Chioides vintra is treated as a ssp. of catillus (following Evans 1951-1955), but is possibly a distinct species. Ssp. vintra, not catillus, occurs in the Windward Is. of Riley's (1975) table.
- Aguna asander is in Cuba (Torre y Callejas 1954, 1971).
- Chrysoplectrum bahiana from Jamaica (Longstaff 1912 as "hurga") is treated as an error.
- Urbanus teleus is recorded from Grenada (as the synonym "eurycles") by Enrico & Pinchon (1969) (however, their figure lacks a central white fw band so their eurycles may refer to Chioides catillus vintra or possibly to U. dorantes obscurus; my copy is a xerox so someone with an original should check it). One male from Jamaica in the British Museum is considered mislabeled. U. teleus is misspelled tellus on p. 164 and the index of Riley (1975).
- U. tanna. One female "Jamaica" in the British Museum is considered mislabeled.
- U. simplicius from "Hispaniola" is treated as an error.
- U. albimargo. One male "Jamaica" in the British Museum and a record from Hispaniola (Hall 1925) are both considered mislabeled or errors (present in Riley's (1975) table, but not in text).
- Astraptus anaphus is on St. Thomas (in Riley's 1975 table but not in his text).
- A. elorus (blasius Plotz type locality Cuba) is considered mislabeled.
- Autochthon cellus. 1 male Cuba in British Mus. is considered mislabeled.
- A. neis. 1 female Jamaica in British Mus. is considered mislabeled.
- Bungalotis erythus (muretus Fabricius type locality "Indies") is considered mislabeled.
- Cogia calchas. 1 male Jamaica in British Mus. is considered mislabeled.
- Telemiades vespasius (type locality "Indiis") is considered mislabeled.
- Nisoniades bessus. 1 male Jamaica in British Mus. is considered mislabeled.
- Burca braco castigata & B. concolor atrata (named by Rindge 1955) were missed by Riley. B. braco in Honduras (2 females in British Museum) are considered mislabeled.
- B. cubensis is treated as a large female braco (Riley 1975).
- Ouleus fridericus. 2 females Jamaica, 1 male Cuba, in British Museum are considered mislabeled.
- Antigonus erosus from Grenada is probably mislabeled from St. Georges Co. Trinidad (Riley 1975).
- A. nearchus. 2 males Jamaica in British Mus. are considered mislabeled.
- Achlyodes mithridates. The name mithridates is older than thraso. A. munroei Bell (type locality Santiago Cuba, Amer. Mus. Novitates #1778), missed by Riley (1975), is treated tentatively as a synonym of A. m. papinianus, perhaps a variant individual with straighter forewing margin and darker fringe (genitalia are the same).
- Timochares trifasciata from Jamaica is considered an error.
- T. amphion Hubner (type locality Indies) is considered mislabeled.
- Anastrus sempiternus. The female type of simplicior was from Cuba, and a paratype of dilloni was from Santiago de Cuba, so Cuba is tentatively listed in the table.

Chiomara asychis was recorded from Hispaniola by Hall (1925) (along with Pyrgus oileus), so is accepted (doubtfully refers to Heliopetes arsalte?).

Ephyriades zephodes from Jamaica (based on 1 male 1 female in British Museum) and Puerto Rico (also based on 1 male 1 female in British Museum) are accepted tentatively because field workers confuse them with E. arcas. Great Inagua based on 1 female 1909 (Clench 1980).

E. brunnea. Honduras (1 female, Evans 1951-1955) could be an error. Hall's (1925) Hispaniola "Brachycoryne arcas" is treated as E. brunnea, because Schwartz (1983a) found brunnea there.

Erynnis zarucco. The Baptisia host belongs to Erynnis baptisiae.

Pyrgus crisia. Puerto Rico is dubious (Comstock 1944, Riley 1975), and is not listed by Ramos (1982) so is deleted.

Heliopetes arsalte is based on one specimen from Jamaica, one from Hispaniola, possibly strays (Riley 1975) or errors (F. M. Brown).

#### Pyrrhopyginae

Jemadia gnetus type locality "Indiis" is mislabeled.

#### Changes in N. Riley's Distribution Table (pp. 199-206)

The following lists the errors and major changes in Riley's table.

Minor changes in nomenclature are not listed. (The tables of distribution of Scott (1970), Brown & Heineman (1972), Comstock (1944), and Riley (1975) are superceded by the present table, which contains many new records and corrections, and records missed by the previous authors.)

Papilio aristodemus Puerto Rico p. 147.

P. androgeus Puerto Rico (Ramos 1977).

Colias philodice a stray in Bermuda.

C. (Zerene) cesonia mainland p. 132.

Phoebis philea Trinidad (Barcant 1970).

P. (not Aphrissa) trite Trinidad (Barcant 1970).

P. (Aphrissa) statira Caymans p. 136, Trinidad (Barcant 1970).

Kricogonia lyside Cuba (Ramos 1977), Trinidad (Barcant 1970), & Venezuela p. 131.

Eurema elathea St. Croix Beatty (1944), Bahamas p. 123.

E. albula not in Fla., but in Trinidad (Barcant 1970).

E. nise Cuba (Torre y Callejas 1971).

E. venusta Dominica p. 122.

E. proterpia in Trinidad (Barcant 1970).

Nathalis iole Bahamas p. 130.

Anetia briarea, not briaria.

A. cubana is in Jamaica (p. 39, & Brown & Heineman 1972).

Lycorea cleobaea (not ceres) a stray St. Lucia p. 39.

Danaus gilippus is in Bermuda, Jamaica, Puerto Rico (Ramos 1977)

D. cleophile from Puerto Rico is an error.

Calisto herophile, not herophilus.

Prepona antimache amphitoe in Puerto Rico (Ramos 1977).

Anaea troglodyta astina Virgin Is.

A. glycerium johnsoni Hispaniola p. 59.

A. verticordia dominicana Windward Isles p. 61.

Limenitis archippus strays to Cuba.

Lucinia cadma sida in Bahamas p. 70.

Eunica monica Bahamas (Beatty 1944, and J. Lepid. Soc. 34:170).

E. tatila Bahamas & Virgin Is.

Hamadryas "februa" not in Trinidad (Barcant 1970) and not in Antilles (diasia a ssp. of H. glauconome, see Jenkins 1983).

Marpesia petreus common Puerto Rico.

M. eleuthea a stray Florida.

Hypolimnas misippus Bahamas & Virgin Is.

Siproeta stelenes St. Kitts p. 77.

Anartia amathea Antigua p. 76.

Precis coenia Bahamas (Rindge 1955).

Vanessa cardui & virginiensis native in Cuba (and undoubtedly to most of the islands) (Torre y Callejas 1954, 1971).

Polygonia interrogationis strays to Cuba.

- Nymphalis antiopa a stray in Bermuda.  
Antillea pelops is on St. Kitts (p. 78), not on Virgin Is.  
Phyciodes tharos Florida and Bimini (Rindge 1952).  
Euptoieta claudia Puerto Rico.  
Libytheana carinenta bachmanii strays to Cuba (Torre y Callejas 1971) (possibly a genetic form of motya there).  
Chlorostyemon simaethis Dominica p. 101.  
Callophrys (Cyanophrys) crethona: the dot should be moved to Jamaica.  
Allosmaitia coelebs found once in Jamaica (this species doubtfully migrates).  
Strymon acis in Puerto Rico.  
S. columella Bahamas p. 105.  
S. bazochii not in Trinidad (Barcant 1970).  
Tmolus azia Florida, Jamaica (Vyhmeister 1980a), Grenada (Enrico & Pinchon 1969), Trinidad, and N. and S. Amer.  
Hemiargus thomasi St. Kitts p. 111.  
Pseudochrysops bornoi Puerto Rico p. 114.  
Synapte malitiosa Jamaica.  
Polites vibex dictynna Hispaniola (Hall 1925, as vibex & dictynna).  
 Ssp. vibex is on Trinidad (Barcant 1970) and the mainland.  
Atalopedes mesogramma Puerto Rico (type locality of apa).  
Euphyes singularis Hispaniola (Evans 1951-1955), Puerto Rico p. 190.  
Asbolis capucinus Florida.  
Nyctelius nyctelius dubious Grand Cayman (Askew 1985).  
Panoquina panoquinoides Bahamas (widespread), Cuba (Torre y Callejas 1971), Hispaniola (Comstock 1944), Puerto Rico (Ramos 1977), St. Croix (Beatty 1944), Leeward Is. (Enrico & Pinchon 1969), St. Martin (ssp. eugeon, 1982 Lepid. News #3 p. 41).  
Epargyreus zestos Florida and Bahamas both p. 157; Hispaniola, Puerto Rico, and Tobago (all three Evans 1951-1955).  
Polygonus leo not in Windward Is., but in Trinidad (Evans 1951-1955).  
P. manueli Trinidad (Evans 1951-1955).  
Chioides catillus in Windward Is. is an error as only C. c. vintra (treated as Chioides vintra by Riley) is there, but ssp. catillus is in Trinidad (Barcant 1970, Evans 1951-1955).  
Aguna asander Isle of Pines (Holland 1916, Torre y Callejas 1971).  
Urbanus teleus not tellus (in text also).  
U. dorantes Bahamas p. 163.  
Autochthon cellus, neis, Cogia calchas, and Nisoniades bessus are all mislabeled from Jamaica.  
Burca concolor atrata type locality Bahamas.  
Anastrus sempiternus. The holotype female of simplicior was from Cuba, and there is one other record (Torre y Callejas 1971).  
Chiomara asychis Hispaniola (Hall 1925).  
Ephyriades arcas Puerto Rico (Ramos 1977).

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TABLE 1. DISTRIBUTION OF CARIBBEAN BUTTERFLIES by James A. Scott

Symbols: s=stray; other letters are the ssp. of Riley (1975) in his sequence; if two or more ssp. occur on one island, the arabic number is the number that occur there. The left-to-right island sequence is FLORIDA, Bermuda, Bimini, Grand Bahama, Great Abaco, Andros, New Providence, Eleuthera, Cat, San Salvador (Watling), Rum Cay, Great Exuma, Long, Crooked, Acklins, Mayaguana, Little Inagua, Great Inagua, Caicos, Turks, CUBA, Isle of Pines, Grand Cayman, Little Cayman, Cayman Brac, JAMAICA, HISPANIOLA, Mona, Desecheo, PUERTO RICO, Vieques, St. Croix, St. Thomas, St. John, Tortola, Anegada, Virgin Gorda, Culebra, Anguilla, St. Martin, St. Barthelemy, Barbuda, Antigua, Saba, St. Eustatius, St. Kitts (St. Christopher), Nevis, Montserrat, Guadeloupe, Desirade, Marie Galante, Les Saintes, Dominique, Martinique, St. Lucia, St. Vincent, Bequia, Barbados, Grenadines, Grenada, Tobago, TRINIDAD, northern SOUTH AMERICA, CENTRAL AMERICA, MEXICO. Large areas abbreviated in capitals; 2-word islands abbrev. with 2 letters from each 1.

Species	Island Abbreviations
Fbbgganecsr	glcamlgctCiglcJHmdPvsststavcassbassnmgdmldmssbbggtTSCM
Leirrnela	aurorcairauUsriaAIOeUitttoniunttanatteoueaecoattearroROEE
Ormbadwetn	menokyiiirBpccbMSnsRectjreglgmbrtbekvnaagsmrLvqreebIAAX
Rmiabrpui	scxgolannckAiaarAPaeIqrhotgoeuaabiauiitdiaaituibsaanMMI
Eurytides zonaria	-----a-----
Eurytides celadon	s-----aa-----
Eurytides marcellinus	-----a-----
Papilio polyxenes	b-----a-----edc
Papilio troilus	a-----s-----
Papilio palamedes	a-----s-----
Papilio andraemon	b-b-bbbb-b-----bb-aaccca-----
Papilio machaonides	-----a-----
Papilio aristodemus	c-----d-----e-b-b-a-a-----
Papilio cressphontes	asa-----a-----aaa-----aaa
Papilio thoas	-----a-----b-----ccdd-----
Papilio thersites	-----a-----
Papilio androgeus	b-----b-----b-b-----s-----aaabb
Papilio aristor	-----a-----
Papilio caiguanabus	-----a-----
Papilio pelaus	-----b-----ac-c-----
Papilio oxynius	-----a-----
Papilio homerus	-----a-----
Battus devilliersi	-----a-----
Battus zetides	-----a-----
Battus polydamas	n-ddddddd-d-dd-----a-a-bc-e-eeee-----f-g-hh-h-ijkl-kmmnnnnnn



	Fbbgganecsr	glcamlgtCiglcJHmdPvssstavcassbnmgdmlmssbbggtTSCM
Species		
Eurema amelia		aa-----
Eurema proterpia		a-----aa-----aaaaa
Nathalis iole		a-aa-a-----aaa-----aaa
Appias drusilla		g-a-a-----aaaaabcc-c-cc-c-----d-d-dd-----ddd-----efffgg
Appias punctifera		-----a-aa-----
Pieris rapae		aa-----a-----a
Pieris protodice		a-----a-----aa-----aa
Ascia monuste		d-bbbbb-b-bb--bb-bbbbbbb-b-ccc-----cc-cc-c-ccccccccc-aaaaaaaa
Ascia josephina		-----e---ba-c-----f-----fd
Melete salacia		-----bb-----a-----
Anetia briarea		-----a-----b-----a-----
Anetia pantherata		-----b-----a-----a-----
Anetia jaegeri		-----a-----a-----a-----
Anetia cubana		-----a-----b-----a-----
Lycorea cleobaea		s-----a-----bb-b-----c-----cccc
Danaus plexippus		aa---aaa-a-aa---b-a-b-bbbb-cdddd-----d-dddd-d-dddd-dddbbbbaa
Danaus eresimus		a-----a-a-aa-a-----a-----b-bbcc
Danaus gilippus		asa--aa-a-----aa-aaaabc-c-----d-ddddee
Danaus cleophile		-----aa-----aa-----
Greta diaphana		-----al-----a-----
Greta cubana		-----a-----a-----
Calisto loxias		-----a-----a-----
Calisto archebates		-----a-----a-----
Calisto chrysaoros		-----3-----a-----
Calisto arcas		-----a-----a-----
Calisto montana		-----a-----a-----
Calisto micheneri		-----a-----a-----
Calisto grannus		-----3-----a-----
Calisto tragus		-----a-----a-----
Calisto clydoniata		-----2-----a-----
Calisto hysius		-----3-----a-----
Calisto confusa		-----a-----a-----
Calisto debarriera		-----2-----a-----
Calisto obscura		-----a-----a-----
Calisto lyceius		-----a-----a-----
Calisto eleleus		-----a-----a-----
Calisto herophile		-----3a-----d-----
Calisto sibylla		-----5c-----a-----

Species	FbbgganecrglcamlgctCiglcJHmdPvssstavcassbassnmgdmldmssbbggtRSCM
Calisto zangis	-----a-----
Calisto nubila	-----a-----
Calisto pulchella	-----2-----
Prepona antimache	-----b-----a-----cccc
Anaea clytemnestra	-----a-----bbb
Anaea marthesia	-----aa-----a-----bbb
Anaea troglodyta	-----e-e-ba-c-ff-----d-d-d-dd-----hh
Anaea glycerium	-----aa-----bbb
Anaea verticordia	---bbb-bb-d-dddd-ccc-e-----fgg-----
Doxocopa laure	-----c-----a-----cbbb
Doxocopa thoe	-----a-----
Asterocampa idyia	-----aa-----a-----bb
Limenitis archippus	-----s-----b-----b
Limen. (Adelpha) iphicla	-----bb-----a-----cccc
Limen. (Adelpha) gelania	-----a-----b-----
Dynamine egaea	-----c-----ab-----ddd
Dynamine mylitta	-----a-----aaaa
Lucinia cadma	---c-c-cc-c-----aa-db-----
Eunica monima	-----a-----aaa-a-----aaaa
Eunica tatila	b-----b-----b-b-b-----aaa
Eunica macris	-----a-----b-----b
Colobura dirce	-----b-----bb-b-----aaaa
Myscelia antholia	-----a-----
Archimestra teleboas	-----a-----
Mestra dorcas	-----a-----
Mestra cana	-----a-aa-aaaa-----
Biblis hyperia	-----a-a-aa-a-----aa-aa-a-a-----aaaa
Hamadryas glauconome	s-----a-----aaa-a-----ccbb
Hamadryas feronia	-----s-----s-----aaaa
Hamadryas amphinome	-----a-----bbaa
Historis odius	s-----aa-----a-----b-bbb-----bbbbbb
Historis acheronta	-----b-----ab-b-----cccc
Marpesia eleuchea	s-----aaaa-----bb-dc-----
Marpesia petreus	b-----b-----a-a-----aabb
Marpesia chiron	s-----a-----aa-s-----aaaa
Hypolimnas misippus	s-----s-----a-----aaa-a-----a-a-aaaa-aaaa-----
Siproeta stelenes	a-----aaa-bb-b-b-----b-----ccaa

Species	Fbbgganecsr glcaml gctCiglcJHmdPvssstavcassbassnmgdmldmssbbggtTSCM
Anartia amathea	a-----a-----a-aaaa-
Anartia jatrophae	d-d-ddddd-dd---bb-ddd-dcb-e-feee--a-a-aa-aaaaa-aaaaagg
Anartia lytrea	s-----bb---a-----
Precis coenia	ba--aa-a-----aa-----a
Precis evarete	a-----a-a-aaaaa-a-aaaa--a-a-a--a-aa--a-abc
Precis genoveva	a-----aa-----a-a-aa-aa-a-a-----a-a--a
Hypanartia paullus	-----a-----a-aa-a-----a
Vanessa cardui	as----a-----a-a-aa-a-----a-aaaa-a-aaaa
Vanessa virginiensis	a-----a-----a-aa-a-----aaa
Vanessa atalanta	aa-----s---ss-----aa
Polygonia interrogatorionis	a-----s-----a
Nymphalis antiopa	as-----
Atlantea perezii	-----b---ad-c-----
Antillea pelops	-----c---ba-a-----a-a-----
Antillea proclea	-----a-----
Phyciodes tharos	a-a-----
Phyciodes phaon	a-----a-a-----a
Phyciodes (Eresia) frisia	a-a-aaa--aa-----a-aa-aa-----a-aa-----aa
Euptoieta claudia	a-aaaa-----a-a-----aa-a-----cbb
Euptoieta hegesia	-aaaaaaaaa-a-a-aaaaaa-b-----aaa
Dione vanillae	caaaaaaaaaaaaaaaaaaaaaa-aaa--aaa-a-a-bb-b-bbbb-bbbbbbd
Dione juno	-----
Dryas iulia	k---ffffff-f-----ggf-gh-a-a-a-----c-c-ci---ijed-dddbbbl
Heliconius (Eu.) isabella	-----b-----a-a-----ccdd
Heliconius charitonius	f---ce-----eeeedca-a-aaaa--baab-b-----hgg
Libytheana carinenta	d-----a---bb-b-----c-----eeff
Calephelis virginienis	a-----s-----
Dianesia carteri	-----aa-a-----b-----
Eumaeus atala	a--aa-----aa-----
Chlorostnymon maesites	a---a-aaa---aa-a---a-a-----b-a--c-cccc
Chlorostnymon simaethis	a-----a---bc-a-a-----a-aa--aa-a--addddd
Nesiostrymon celida	-----a---bc-c-----
Callophrys crethona	-----a-----
Pseudolycaena marsyas	-----
Thereus bourkei	-----a-----a---bbcc

Species	FbbgganecrglcamlgctCiglcJHmdPvssstavcassbassnmgdmldmssbbgggtTSCM
Allosmaitia coelebs	-----a-----ab--b-----
Allosmaitia piplea	-----a-----ab--b-----a--aa-a--a-----
Strymon acis	a---c-cccccc---h-b-ddddg---e-eeee---ee-fe-e-f-f-----
Strymon martialis	a-a-aaaaaaa-a--aa--a-a-----a-----
Strymon monopeteinus	-----a-----
Strymon rufofusca	-----a-----aaaa--a-aaa
Strymon bubastus	-----b-bbbb---b-b-b-b-bbb-b-bbbb---baaa-
Strymon columella	d-bbbbbbbbbbb-bb--bbb-bb--c-a-a--a-a-----fee
Strymon toussainti	-----a-----
Strymon limenia	s-----a-a--a--a-a-a-----
Strymon christopheii	-----a-----a-----
Strymon bazochii	-----a--aa-----bbb
Electrostrymon pan	-----a-----a-----
Electrostrymon dominicana	-----a-----
Electrostrymon angelia	a-b-bbbbbbbbbb-b-bbaa-cd--d-d-----
Electrostrymon angerona	-----a-aa-aaaa--aa-----
Tmolus azia	a-bbbbbbbbbbbb--bbb-bbbbbbb--b-aaaa--cc-c-c-cc-cccc--eeedd
Leptotes cassius	-----a-----s-----aa
Leptotes perkinsae	d-d--bb---bbbb-bbb-bbc--bb-----eaa
Leptotes marina	a-----s-----aa
Brephidium exilis	e---a---a---c-aaa-cc-----ff
Hemiargus isola	-----b-b-bbbb---bb-bb-b-bbbbbbbb-bbbddddd-
Hemiargus ceraunus	a---bbbbbbbbbcc-fcc-----dd-d-----
Hemiargus hanno	-----e-eeee---e-e-e-----
Hemiargus thomasi	---aaa-a-aaa---aabb--a-----
Hemiargus woodruffi	-----a-----
Hemiargus ammon	-----a-a-----
Hemiargus dominica	-----a-a-----
Pseudochrysops bornoi	-----a-a-----bbbcc
Synapte malitiosa	-----a-a-----
Pheraeus unia	-----a-----
Pyrrhocalles antiqua	---b-b-----cc--da-a-----
Cymaenes tripunctus	a---a-----aaa-aaaaa-aaaa---bbbb
Perichares philetes	-----a---aa--a-----aabb

Species	FbbgganecrglcamlgctCiglcJHmdPvssstavcassbassnmgmldmssbbgggtTSCM
Rhinthon cubana	-----a-----ab-----a-----b-----bbbbb
Rhinthon bushi	-----a-----a-----a-----a-----a-----
Holguinia holguin	-----a-----a-----a-----a-----a-----
Oarisma nanus	-----aa-----b-----a-----a-----a-----
Oarisma stillmani	-----b-----a-----a-----a-----a-----a-----
Hylephila phyleus	as-aaaa-aaaa-aaa-aaa-a-aa-aaa-a-aaaaa
Polites vibex	b-----a-----a-----a-----a-----a-----
Polites baracoa	c-----a-----aa-----b-----a-----a-----
Wallengrenia egeremet	b-----aaaaaaa-a-----aa-----b-----a-----a-----
Wallengrenia otho	d-----g-ggg-----baaaa-aa-a-----cc-c-cccc-----ffee
Atalopedes mesogramma	-----aa-----aa-----b-----b-----a-----
Atalopedes carteri	-----a-----a-----a-----a-----a-----
Atalopedes nabokovi	-----a-----a-----a-----a-----a-----
Paratrytone batesi	-----a-----a-----a-----a-----a-----
Parachoranthus magdalia	-----a-----a-----a-----a-----a-----
Choranthus vitellius	-----a-----a-----a-----a-----a-----
Choranthus haitensis	s-----a-----a-----a-----a-----a-----
Choranthus melissa	-----a-----a-----a-----a-----a-----
Choranthus radians	-----b-----b-----a-----a-----a-----
Choranthus lilliae	-----a-----a-----a-----a-----a-----
Choranthus borinconus	-----a-----a-----a-----a-----a-----
Euphyes singularis	-----ab-----aa-----a-----a-----a-----
Euphyes cornelius	-----bbbbb-bb-----aa-----a-----a-----a-----
Asbolis capucinus	a-----a-----aa-----a-----a-----a-----
Lerodea eufala	a-----a-----aa-----a-----a-----a-----
Calpodes ethlius	as-----a-----a-----a-----a-----a-----
Panoquina panoquinoides	a-aa-a-a-aaa-aa-a-aaaaa-a-a-bb-b-bb-aaaaa
Panoquina ocola	a-----a-----aa-----a-----a-----a-----
Panoquina sylvicola	s-----a-----aaa-aa-a-aaaaa-a-a-aa-aaa-aaaaa
Panoquina nero	-----a-----aa-----a-----a-----a-----
Panoquina corrupta	-----a-----a-----a-----a-----a-----
Nyctelius nyctelius	s-----a-----a-----aaa-a-a-----b-bb-bb-aaaaa
Saliana esperi	-----a-----a-----a-----a-----a-----
Phocides pigmalion	d-cc-cc-----cc-----cc-c-a-a-----b-bbbb
Phocides lincea	-----a-----a-----a-----a-----a-----
Proteides mercurius	s-----cc-----db-e-----g-----ggf-----haaaaa
Proteides maysi	-----aa-----a-----a-----a-----a-----

## Species

Epargyreus zestos	FbbgganecrglcamlgctCiglcJHmdPvssstavcassbnmgdmlmssbbggtTSCM
Epargyreus antaeus	a-aaaaaaa---bbb---a-a-a-a---a---a-aa---aaaa-a-aaaa---
Epargyreus spanna	-----a-----a-----
Polygonus leo	d--a-aaaa---aa--bc--a-aaaa--a--a-a---a---d-ddd
Polygonus manueli	-----a-----a-----a-aa-aaaaa--a-bbbb
Chioides catillus	-----a-----a-----d---d-bbbcc
Chioides ixion	-----a-----a-----
Chioides marmorosa	-----a-----a-----
Aguna asander	-----c---ba-----ccc
Polythrix octomaculata	-----a-----a-----bbb
Urbanus proteus	b-aaaaaaaaa---a-aaa-aaaa-a-aaaa---aaaaa---aaaa-aaabbbb
Urbanus dorantes	c-b-b-----bbb---aa-a-aaaa---ddd-dd-d-dddddddcccc
Astraptus talus	-----a-----aa-a-----a-a---aaaa
Astraptus xagua	-----a-----a-b-----a-----aaaa
Astraptus alardus	-----aa--b-----d-dcc
Astraptus jaira	-----a-----a-----
Astraptus cassander	-----aa-----
Astraptus anaphus	-----a-----aa-a-a-----a-aaaa--a-bbcc
Cabares potrillo	-----a-----aa-----bbaa
Burca concolor	---b---bbbbbb---a-----
Burca hispaniolae	-----a-----a-----
Burca braco	---bbb---b-----a-----
Burca stillmani	-----a-----a-----
Achlyodes mithridates	-----d---ba-a-aa-----cc--c-----eeee
Grais stigmaticus	-----a-----a-----bbb
Timochares ruptifasciata	-----a-----a-----b
Anastrus sempiternus	-----a-----aa-----ccbb
Chiomara asychis	-----d-----ba--bb-ccdd
Chiomara mithrax	-----a-----a-----aaaa
Gesta gesta	-----a-----aa-a-----aaabb
Ephyriades arcas	-----bb--b-b-bbbb---aa-aaaa--a---bb
Ephyriades zephodes	-----s-a-----aa-a-a-----a-----aaaa
Ephyriades brunnea	d---aaa-aaa-aaaaaaa---ba-----c--c-----a-
Erynnis zarucco	a-----a-----a-----bbb
Pyrgus crisia	-----a-----a-----
Pyrgus oileus	a-----a-aa-aaaaa-aaaaa---aa-aa-aabb-b-bbbb--bbbbbaa
Helioptes arsalte	-----ss-----aaaa



TABLE 2. BIOGEOGRAPHY STATISTICS. 279 total species in Caribbean. Areas of the smaller Bahamas Is. are estimated. Index of Faunal Resemblance = proportion of the species found on the island with the smaller fauna which are the same as those on the island or continent with the larger fauna. \*Incomplete, only lists species that reach the Caribbean Is. The regression equation ignores the inadequately collected islands (marked with @); area is in sq. km. (7.955 changes to 10.17 if area is measured in sq. mi.).

$$\text{Species} = 7.955 \text{ Area}^{.258} \quad (\text{correlation } .88)$$

Island	Area	Spec.	--Index of Faunal Resemblance--							
			Fla	Cub	Jam	His	PR	SAm	CAm	Mex
1 FLORIDA	---	102*	1	.87	.66	.74	.62	.63	.72	.77
2 Bermuda	54	14	1	.79	.64	.64	.57	.64	.86	1
3 Bimini	18	20	.95	.9	.8	.8	.7	.8	.75	.8
4 Grand Bahama@	1110	23	.87	.96	.78	.87	.78	.87	.83	.83
5 Great Abaco@	1760	26	.85	.92	.73	.69	.65	.58	.58	.54
6 Andros	5960	60	.75	.97	.67	.75	.58	.52	.57	.57
7 New Providence	220	47	.77	.91	.64	.70	.53	.51	.55	.55
8 Eleuthera	580	37	.78	.92	.76	.76	.57	.51	.54	.51
9 Cat	520	24	.83	.88	.67	.67	.62	.46	.46	.46
10 San Salvador	130	44	.82	.93	.77	.75	.66	.55	.57	.57
11 Rum	65	26	.77	.88	.69	.69	.58	.46	.46	.46
12 Great Exuma	210	25	.76	.92	.72	.72	.6	.56	.6	.52
13 Long	410	31	.81	.94	.77	.81	.68	.65	.68	.65
14 Crooked@	130	19	.89	.89	.74	.84	.63	.58	.63	.58
15 Acklins@	570	8	1	.75	.75	.88	.62	.62	.75	.62
16 Mayaguana@	280	5	.8	.8	.8	.8	.6	.4	.6	.4
17 Little Inagua	127	19	.95	.79	.79	.79	.68	.68	.68	.63
18 Great Inagua	1500	34	.88	.88	.85	.88	.79	.68	.74	.71
19 Caicos@	490	16	.94	.75	.75	.94	.69	.62	.62	.56
20 Turks@	26	7	.71	.71	.71	1	.71	.29	.43	.29
21 CUBA	111300	171	.87	1	.79	.68	.79	.76	.81	.80
22 Isle of Pines	3060	68	.65	.99	.62	.72	.53	.53	.60	.57
23 Grand Cayman	210	41	.90	1	.90	.90	.83	.73	.83	.83
24 Little Cayman	24	24	.88	1	.83	.88	.75	.62	.71	.75
25 Cayman Brac	40	22	.86	1	.91	.91	.86	.77	.82	.82
26 JAMAICA	11100	126	.66	.79	1	.77	.71	.69	.70	.68
27 HISPANIOLA	76700	177	.74	.68	.77	1	.89	.76	.77	.73
28 Mona	62	19	.95	.89	.89	.95	1	.89	.89	.84
29 Desecheo@	2	4	1	.75	1	1	1	1	1	1
30 PUERTO RICO	8860	106	.62	.79	.71	.89	1	.70	.71	.69
31 Vieques@	130	1	1	1	1	1	1	1	1	1
32 St. Croix	207	41	.80	.85	.85	.90	1	.83	.83	.78
33 St. Thomas	83	33	.70	.76	.76	.85	1	.79	.79	.73
34 St. John	53	24	.75	.79	.75	.79	1	.79	.79	.71
35 Tortola	50	25	.76	.76	.76	.84	1	.84	.84	.76
36 Anegada@	50	4	.5	.5	.5	.75	1	.5	.5	.25
37 Virgin Gorda@	50	1	1	1	1	1	1	1	1	1
38 Culebra@	40	0	--	--	--	--	--	--	--	--

	Island	Area	Spec.	--Index of Faunal Resemblance--							
				Fla	Cub	Jam	His	PR	SAm	CAm	Mex
39	Anguilla@	91	2	1	1	1	1	1	1	1	1
40	St. Martin	97	18	.67	.67	.72	.83	.94	.83	.78	.61
41	St. Barthelemy	21	19	.63	.74	.79	.79	.95	.79	.84	.68
42	Barbuda@	161	0	--	--	--	--	--	--	--	--
43	Antigua	280	28	.75	.82	.79	.82	.93	.86	.82	.71
44	Saba	13	13	.85	.85	.85	.92	1	.92	.92	.77
45	St. Eustatius@	23	5	.6	.8	.6	.8	1	1	1	.8
46	St. Kitts	176	41	.73	.71	.71	.85	.95	.85	.80	.73
47	Nevis@	130	5	1	.8	1	1	1	1	1	1
48	Montserrat	84	37	.70	.73	.73	.89	.92	.86	.81	.76
49	Guadeloupe	1600	42	.71	.71	.71	.86	.88	.88	.83	.76
50	Desirade@	23	7	.43	.57	.57	.57	1	.71	.57	.29
51	Marie Galante	140	16	.75	.75	.69	.88	.88	1	.88	.81
52	Iles des Saintes	10	10	.6	.6	.6	.7	.7	.8	.6	.5
53	Dominique	780	50	.68	.7	.68	.8	.82	.86	.78	.72
54	Martinique	1100	37	.70	.73	.70	.81	.81	.92	.81	.78
55	St. Lucia	610	47	.62	.64	.60	.81	.79	.94	.81	.77
56	St. Vincent	344	41	.61	.61	.63	.71	.73	.93	.83	.78
57	Bequia@	20	1	1	1	0	1	1	1	1	1
58	Barbados	430	24	.79	.79	.75	.88	.88	.92	.75	.71
59	Grenadines	44	23	.70	.70	.65	.83	.78	.91	.87	.78
60	Grenada	344	45	.67	.64	.67	.73	.73	.91	.8	.78
61	Tobago	300	57*	.60	.72	.65	.77	.75	1	.86	.82
62	TRINIDAD	4830	95*	.51	.75	.68	.78	.69	.99	.92	.89
63	SOUTH AMERICA	---	121*	.63	.76	.69	.76	.70	1	.92	.89
64	CENTRAL AMERICA	---	124*	.72	.81	.70	.77	.71	.92	1	.97
65	MEXICO	---	128*	.77	.80	.68	.73	.69	.89	.97	1